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SUPERIOR HIKING TRAIL

A FEASIBILITY STUDY

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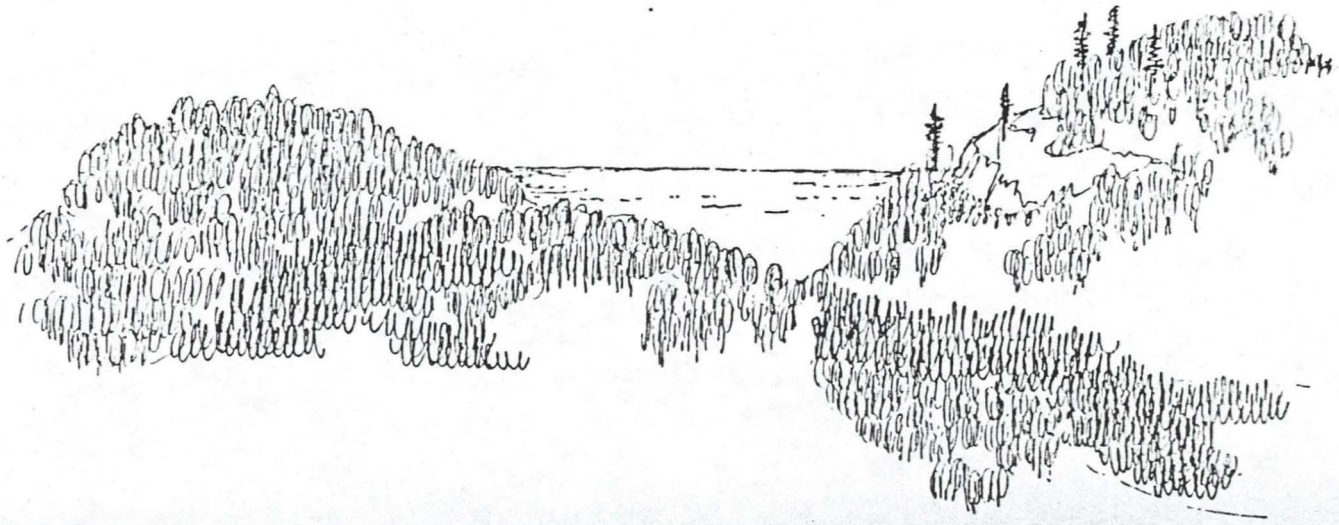
NORTH SHORE HIGHLANDS LANDSCAPE AREA



"The Sawtooth Mountain Range from Two Harbors to the Canadian border includes some of the highest mountain peaks in the Forest. The high elevations and ruggedness of the Sawtooth Mountains are emphasized by Lake Superior, the largest body of water bordering Forest land. The lower elevations contain a variety of scenic attractions including free-flowing streams, waterfalls, and rock outcrops. Other areas in the Forest provide high scenic quality; however, these are limited in size and scale when compared to the North Shore Highlands."

Guide to Superior National Forest Landscape Management

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Title: Superior Hiking Trail: A Feasibility Study

Abstract: Interest in constructing a long distance hiking trail on the ridgeline paralleling Lake Superior from Duluth, Minnesota to Thunder Bay, Ontario has been expressed for a number of years. About 15 miles of trail have been built across the Tofte Ranger District on this alignment. Use of the existing trail, which provides panoramic vistas overlooking Lake Superior and the Sawtooth Mountains, has been high adding to the tourism appeal of the area.

There are several obstacles to completion of the long distance trail which would have to be overcome. County, State and Federal Agencies would be involved along with private and corporate landowners. Funding would have to be made available or an alternative means of constructing the trail, such as Volunteerism, would be needed. Project costs are high for an undertaking of this size and it is necessary to ascertain whether the area is suitable for providing the quality facility that will attract users before an investment is made.

This paper addresses the demand for hiking trails, the physical attributes of the area, an estimate of the costs and an indication of the support for the project.

Canada
Thunder Bay
Minnesota
Grand Marais
Lake Superior
Two Harbors
Duluth
Michigan
Wisconsin

I. INTRODUCTION

A. History

Northern Minnesota is well known for its extensive system of canoe trails which were once the travel route of the Voyagers and the resident Native Americans. In fact, there was also a rather extensive system of hiking trails at one time. Several of the major access roads in the Superior National Forest provide testimony to that fact; the Echo Trail, Gunflint Trail, Sawbill Trail, Honeymoon Trail, Caribou Trail and Arrowhead Trail are now the main roads and highways of the Forest. Further testimony to the extensive trail system can be obtained from a personal account of an early Superior National Forest employee. "There were very few roads within the North Shore Unit of the Superior National Forest in 1922, and the roads which existed were very poor. If we were going to the Tofte District, to Fourmile Lake or Sawbill Lake area, we went by boat from Grand Marais to Lutsen and by foot trail from there to the place where we were going. In the early days, the trails were for administration where as now the few trails in existance are mostly for recreation." (Sundling 1969). In the 1930's the CCC's reopened and maintained many miles of these trails and also constructed new trails adding to the network of foot trails.

Since that time, roads were built on the location of major trails, mechanical travel improved and the need for access trails diminished. Recreationists focused on water based recreation, largely developed campground facilities near the water's edge. Trails fell into disuse and virtually disappeared. Lucas and Rinehart, (1976) report that nationwide trail mileage in National Forests dropped almost one-third from a peak in 1945, so this was not a happening unique to Northern Minnesota.

As the numbers of miles of trails were decreasing the numbers of hikers started to increase. From 1965 to 1970 hiking participation increased 26 percent and walking for pleasure grew 57 percent even though the population 12 years of age and older grew only 8 percent. (Lucas and Rinehart 1976). This resurgence of interest in hiking and the lack of hiking opportunities was recognized by Congress when it passed the 1968 National Trails System Act.

Sometime during this resurgence the idea of a hiking trail paralleling the North Shore of Lake Superior was advocated. In 1973 a trail plan for the Tofte Ranger District was completed which addressed a hiking trail along the North Shore, but the plan was restricted in scope to the ranger district boundary. Minnesota State Comprehensive Outdoor Recreation Plan (SCORP) in 1979 recommended a hiking trail on the ridgeline of the North Shore as the only new long distance trail to be built during that planning period. Several termini have been proposed with the most ambitious being Duluth, Minnesota to Thunder Bay, Ontario, a distance of 195 miles by road.

To date little has been accomplished. About 15 miles of the Superior Hiking trail have been constructed on the Tofte Ranger District of the Superior National Forest.

There are several valid reasons for the inactivity. The trail from Duluth to Thunder Bay would span 3 counties, 2 State Forests, 8 State Parks, 2 Ranger Districts of a National Forest, 1 Indian Reservation, the Province of Ontario and numerous landholdings by private individuals and corporations. The different policies, standards, and restrictions in all these bureaucracies are deterrents as is the cost of constructing the trail. Coordinating a cooperative effort amongst the various agencies and interest groups involved is no small task although cooperative relations have probably never been better than at present and that removes a large roadblock. Finally, the demand for hiking trails and the support necessary has been lacking. Therefore, recreation construction dollars have been concentrated in other priority activities.

B. Present Situation

Hiking and backpacking are common recreation pursuits in the East and West. In the Lake States hiking and backpacking have not had the same interest and with the exception of the Porcupine Mountain area of Michigan's Upper Peninsula, no notable trail systems exist.

Comparing miles of trail per 100,000 people within U.S. Bureau of Census regions shows that the Mountain and Pacific regions have 471 miles/100,000 people and 117 miles/100,000 people while the East North Central and West North Central have 6 and 5 miles/100,000 people respectively (Lucas & Rinehart, 1976).

This disparity can be explained in various ways. The flat lands of the Lake States are conducive to mechanized travel, the large number of lakes and streams has encouraged water based recreation activities, and probably most significant is the lack of payoff in terms of vistas and scenic views from hiking trails because of the dense vegetation and lack of topographic relief.

The Minnesota DNR Trail Plan, 1984, lists a total of 12,870 miles of trail existing in the state. Of this, 9,360 miles are designated as snowmobile trail and 3,848 miles as hiking trail. In reality, the miles of true hiking trail are much less, probably less than 1,000 total. This is because some multi-purpose trails, which combine snowmobile, X-C ski, hiking and horseback riding uses, have been counted as existing in each category. Few of the true hiking trails provide long distance hiking opportunities for the avid backpacker.

II. PURPOSE OF STUDY

This study will examine the desireability and feasibility of constructing a long distance hiking trail paralleling the North Shore of Lake Superior.

III. LITERATURE REVIEW

User demand, use trends, and levels of participation were of primary interest in this study. Minnesota SCORP and The MDNR Trail Plan, 1984, provided the most applicable demand, use trend, and participation level data. National trends and participation rates were available from the National Park Service 1982-83 Recreation Survey and from reports by Elsner (1985), Lucas & Rinehart (1976), Spencer et. al. (1980), and Superior National Forest Recreation Information Management (RIM) data. User preference, or what makes a good trail, was described in The Minnesota DNR Trail Plan, (1984). A description of the natural resources in the area was found in the North Shore Data Atlas, Minnesota Coastal Zone.

No research or documentation of the economic benefit to the local tourism industry due to hiking trails is available.

Personal contacts and informational meetings were held with public agencies, local governments, resort and motel owners and hiking enthusiasts to determine their support and interest in the proposed project.

IV. METHODOLOGY

To determine the feasibility of undertaking the project it is necessary to analyze:

1. Demand for a hiking trail.
2. Capability of the area to provide the natural resources needed.
3. Present use levels and the projected participation levels.
4. Cost of construction and maintenance of the trail.
5. Local interest and support for the project by the business community and general populace.

A literature review provided the basic demand, use and projected use data.

Meetings between the Minnesota DNR and Superior National Forest personnel resulted in agreement of the procedure to be followed in determining the project viability.

Meetings were also held with representatives of the Bureau of Indian Affairs, local resort and tourism associations and interested individuals to inform them of the proposed project and to ascertain their interest in and support of the project.

V. ANALYSIS

A. Trends

1. Demand

Establishing user demand for a hiking trail in an area where there are no comparable facilities and in a geographic area not known for hiking is less than an exact science. However, some surveys and studies have been completed which may be applicable.

The 1980 RPA Assessment provides several determinants of demand for outdoor recreation. Some positive factors have been the growth in both population and income, the leisure time available, the increasing participation by women in outdoor activities and the fitness fad. Factors reducing the demand are the increasing average age of the population, rising energy costs and the economy in general.

The 1980 Assessment projects a nationwide increase in demand for land based outdoor recreation activities of 61 percent between the years 1977 and 2030. The North Central Region is projected to have an increase in demand of 58 percent in the same time period. Not all of the increase will be in hiking, of course, but the hiking demand index is expected to increase 59 percent using the medium projection level in the Assessment.

Minnesota SCORP data from a survey of over 3,000 persons statewide shows over 7 percent of the population desire more hiking opportunities and 1.2 percent desire more backpacking opportunities. Minnesota SCORP also projects a 10 percent increase in hiking activities between 1978 and 1990.

The Minnesota DNR Trail Plan states that at a series of public meetings held in 1981 to obtain public input on trail policy, 70 percent of the respondents indicated they wanted more hiking trails.

More locally, the Draft Environmental Impact Statement for the Superior National Forest Land Management Plan projects a 50 percent increase in non-wilderness dispersed recreation activities between 1983 and 2030.

In addition, at 15 public forums held around the state by MDNR to define issues for The Minnesota DNR Trail Plan, "more hiking trails" was identified as a major issue in 3 of 6 Administrative Regions and a minor issue in the remaining three.

2. Participation Rates

Elsner (1985) reported that dispersed recreation use activities on National Forests from 1941-1984 rose from about 25 percent to about 60 percent of the total recreation use.

Lucas and Rinehart (1976) related that for the period 1965-1970 when the population 12 years of age and older grew 8 percent, hiking increased 26 percent and walking for pleasure 57 percent.

Spencer, Echelberger, Leonard and Evans (1980) using data from a survey by the U.S. Bureau of Census in 1965 found that 9.9 million Americans hiked or backpacked. A followup survey in 1977 showed 28.1 million Americans hiked or backpacked. The same authors cited Forest Service records indicating hiking and mountain climbing activities increased from 4 to 11 million visitor days in the time span from 1966-1979.

The 1982-1983 Nationwide Recreation Survey sponsored by the National Park Service showed 5 percent of the respondents participated in backpacking activities and 14 percent in day hiking. Using these percentages and applying them to the U.S. population 12 years of age or older you have 35 million Americans that hike or backpack. This converts to a 20 percent increase since the survey cited by Spencer, et. al. (1980) was completed in 1977.

Recreation Information Management (RIM) data for the Superior National Forest show that hiking accounted for 15 MVD's in 1968, 27 MVD's in 1972 and 49.7 MVD's in 1984. (MVD = thousand visitor days; one visitor day equals 12 hours spent by one person in that activity or 1 hour by 12 persons.)

Minnesota SCORP data for 1980 show that over 192,000 people (25 percent of total occasions) are leaving Minnesota for a backpacking recreation occasion and over 410,000 (8 percent) leave for a hiking recreation occasion. Some of these people would likely use trails within the State if what they were seeking was available.

3. Conclusions

While ours is an aging society and hiking and backpacking participation declines with age the trends are obvious. The rate of increase in hiking experienced since the 1960's may level off because the "baby boom bubble" has passed through the pipeline but the fitness fad is working to counteract that effect. Cordell (1985) reported that activities requiring aerobic conditioning have had a rapid increase of over 3 percent per year since 1960 and that fitness as a lifestyle will probably continue into the 1990's. That factor itself could recruit new hikers and also retain persons who are beyond the normal hiking age class, 12-45 years old, keeping the number of participants at relatively high levels.

B. Resource Capability

1. Criteria

In The Neglected Hiker, Lucas and Rinehart (1976) offered that "Hiking trails should be designed primarily for scenic enjoyment, as an opportunity for esthetic experiences. Seeking out views, vistas, enchanting little spots and environmental variety should prevail over engineering efficiency. The shortest distance should not be followed. A good trail does not necessarily have to lead to a specific destination; trails can be an end in themselves, although the opposite idea has been expressed. Most hiking trails can be fairly simple." From that paragraph alone a set of criteria could be developed that would be a basis for selecting an area that would offer the potential trail users the experience and setting they envisioned.

The Minnesota DNR Trail Plan (1984), lists nine primary trail location criteria. These criteria were developed from public input, SCORP survey data, professional literature, DNR trail policies and (MN Stat 86A), The Outdoor Recreation Act. Most, if not all, could find a correlation in the paragraph by Lucas and Rinehart.

The nine criteria are:

a. topographic roughness
b. vegetative diversity
c. proximity to water
d. (Lack of) agricultural suitability
e. historic travel routes
f. proximity to resorts and campgrounds
g. proximity to and frequency of public transportation
h. proximity to population
i. location of public land

2. Area Evaluation

How does the North Shore Highlands, which is roughly the Lake Superior watershed, measure up to these descriptions and criteria?

Elsnicky (1978) describes the North Shore thusly; "The North Shore of Lake Superior is a totally unique resource, both physically and culturally. The scenic attributes of the North Shore are comparable to those of the fjord coast of Maine and the Pacific coast in Washington and Oregon. The Shore is characterized by rocky headlands, sheer cliffs, cobble beaches and secluded coves ringed with a varied mantle of pines, birch, maples and aspen. The rugged topography and vast expanse of Lake Superior combine to create one of the most scenic areas in North America."

In an undated publication, North Shore Data Atlas, Minnesota Coastal Zone, is the following description. "The North Shore has the greatest landform diversity of any area in Minnesota. The glacial activity created a spectacular variety of local terrain, ranging from flat lake plains to a rugged, rocky shoreline. Minnesota's lowest and highest elevations are in the Lake Superior watershed."

The Guide to Superior National Forest Landscape Management carries this description. "The Sawtooth Mountain Range from Two Harbors to the Canadian border includes some of the highest mountain peaks in the Forest. The high elevations and ruggedness of the Sawtooth Mountains are emphasized by Lake Superior, the largest body of water bordering Forest land. The lower elevations contain a variety of scenic attractions including free-flowing streams, waterfalls, and rock outcrops. Other areas in the Forest provide high scenic quality; however, these are limited in size and scale when compared to the North Shore Highlands."

A more objective view can be obtained from information contained in the North Shore Data Atlas, Minnesota Coastal Zone (undated) as follows.

The North Shore from Duluth to the Canadian border is about 200 miles in length and spans three counties; St. Louis, Lake and Cook.

Cook County, the northernmost, has the most rugged relief with over 1,100 foot change in elevation and St. Louis, the southernmost, the least relief with only 800 foot change. Elevations range from 602 feet above sea level at Lake Superior to 1,770 feet near Grand Marais in Cook County. Thus a pattern in elevation emerges as you go north along the shore. Slope patterns have a similar variation from south to north. Slope in Cook County is consistently severe, has greater variation in Lake County and is moderate in St. Louis County. See Appendix A.

The North Shore is known for its cold, cascading streams. Streams in the north converge to form cascades because of the rocky, rugged terrain while streams to the south flow more leisurely due to less gradient.

Ninety-five percent of the area is forested. Again there is variation as you proceed north; aspen-birch is found throughout the area but spruce-fir and pines are concentrated in Cook County. Maples which provide spectacular fall colors are concentrated in Lake County but are found almost as commonly in Cook County. The mixing of color and texture provides a desireable visual contrast.

United States Highway 61 parallels the shoreline from Duluth to the Canadian border and because it is the only route which provides access from Duluth to Thunder Bay, Ontario it is heavily used by

recreationists. Eight State Parks are accessed from U.S. Highway 61 which is billed as a scenic travel route by the Minnesota Division of Tourism. Highway 61 approximates the route of John Beargrease, a Grand Portage Native American, who delivered mail from Duluth to Grand Marais by dogsled. An annual John Beargrease Dogsled Race from Duluth to Grand Marais and back is held to commemorate that era.

Resorts and motels dot the shore of Lake Superior adjacent to Highway 61 providing conveniently located overnight accomodations as well as other services the potential user would require. The eight State Parks also provide camping accomodations at regularly spaced intervals. A hike through trail system could easily be developed through cooperative efforts by the private businesses as is currently done via the X-C ski trail system.

Air, rail and bus passenger service is available to Duluth on a daily basis. One bus is scheduled each day from Duluth to Thunder Bay in the evening and a return trip is made in the morning. Thunder Bay has a full service airport also.

Minneapolis and St. Paul are about 140 miles distance from Duluth. The population of these three cities is nearly 1 million persons. If you consider that the average Minnesotan will travel 125 miles to backpack or hike (Minnesota SCORP, 1980) all of these people are potential users. Adding in all the suburbs and small towns within the same geographical area adds greatly to the number of potential users.

If the 1982-83 nationwide Recreation Survey participation rates for backpacking and day hiking are applied to the approximate population of Minneapolis-St. Paul and Duluth you get the following results:

Backpack: 5% x 1,000,000 population = 50,000
Day Hike: 14% x 1,000,000 population = 140,000
190,000 Potential Participants

If only 5 percent of the potential participants hiked on the trail each year, there would be nearly 10,000 hikers using the facility.

A secondary market which is not exploited at present is Chicago. A survey (Blank, Simonson, Ballman, Burke, Korte, and Heikkala, 1983) showed a high potential that 223,500 households in the Chicago area would vacation in northeastern Minnesota. Nine percent of the current visitors to the North Shore participate in hiking according to Dr. Tom Wood, Director of Tourism and Development Center, University of Minnesota, Duluth. Therefore, the potential number of hikers in these Chicago travelers is 223,500 households x 4 persons/household x .09 = 80,460 participants.

Again, if only 5 percent of these persons hiked the trail each year it would add 4,200 hikers. This is a market that deserves more attention to attract these potential hikers to the area.

Land ownership within the Lake Superior Watershed is predominately public. Only 28 percent of the land is privately owned. The Federal government is the largest landowner with 42 percent of the total. The amount of publicly owned land and the agency with the greatest ownership varies greatly within each county. Private ownership is least in Cook County (18%) and highest in St. Louis County (48%).

3. Conclusions

Using either the broad subjective criteria or the more scientific objective criteria one arrives at the same conclusion. The North Shore Highlands area is highly suited for construction of a quality hiking trail. It measures up well against the natural resource criteria which have been identified as critical to development of a trail system. See Appendix B (MDNR Suitability Map).

In addition, because of the natural gradations in resources as you proceed north from Duluth the area lends itself to classifying areas under the ROS (Recreation Opportunity Spectrum) system and to variations in the trail standards and facilities. It would be appropriate to provide a more primitive experience as you proceed north from the more settled and developed area in St. Louis County where the topography is moderate and vegetation is less diversified to the lightly populated, more rugged topography of Cook County where sights and sounds of man are less noticeable and the amount of public lands are more prevalent. (See Appendix C for ROS description).

C. Estimated Costs

1. Construction

Cost of constructing trails is highly variable because of the variation in soils, vegetation, slope.

Hiking trail construction by its nature is labor intensive because handtools and manpower are involved instead of mechanical earthmovers.

For purposes of this study an average cost of trail construction was determined to be $2,500/mile. This compares favorably with the costs used for trail construction in development of the Superior National Forest Land Management Plan which were $2,200/mile. (Personal conversation w/Dave Tucci.) Minnesota DNR estimates their costs to be comparable also.

Stream crossings with bridges are expensive. Superior National Forest average costs have been $2,000 for a 10 foot span and $3,000 for a 25 foot span.

To estimate the cost of constructing the trail it is necessary to estimate the total miles of trail and number of bridges needed.

The road miles of various potential termini are:

Duluth, MN to Thunder Bay, Ontario	195 miles
Duluth, MN to Canadian Border	155 miles
Two Harbors, MN to Canadian Border	130 miles
Two Harbors, MN to Grand Marais, MN	85 miles
Duluth, MN to Grand Marais, MN	110 miles

Because a trail will be longer, of necessity, than the road distance a factor must be applied. Using other locally constructed trails as a guide a factor of 1.7 times the road miles is suggested.

Costs then become:

Termini	# Road Miles	Factor	Cost/Mile	Total
Duluth/Thunder Bay	195	1.7	$2500	$828,750
Duluth/Border	155	1.7	$2500	$658,750
Two Harbors/Border	130	1.7	$2500	$552,500
Two Harbors/Grand Marais	85	1.7	$2500	$361,250
Duluth/Grand Marais	110	1.7	$2500	$467,500

Estimating the cost of bridges requires that some assumptions be made since only an on the ground check will determine the actual number needed and their length.

The North Shore Corridor Snowmobile trail required 62 bridges from Duluth to the Canadian border. Assuming that the hiking trail standards would allow some foot crossings without bridging required by snowmobiles and groomers or that existing bridges could be utilized, it is estimated that 50 bridges at an average cost of $3000 each would be required to go from Duluth to the Canadian border. The total bridge costs would be:

Termini	# Bridges	Cost/Each	Total
Duluth/Thunder Bay	62	$3000	$186,000
Duluth/Border	50	$3000	$150,000
Two Harbors/Border (1)	45	$3000	$135,000
Two Harbors/Grand Marais (1)	27	$3000	$ 81,000
Duluth/Grand Marais (1)	35	$3000	$105,000

(1) Ratio of # miles in this section compared to miles from Duluth to border was used to estimate # bridges needed.

There will be additional needs for signing at trailheads, route markers, campsite installations.

Use $20,000 for trailhead signing - all termini options.

Placing a campsite every 5-10 miles along the trail (the average hiking distance/day) requires:

	# Trail Miles	# Campsites $500 each	Total $
Duluth/Thunder Bay	340	42	$21,000
Duluth/Border	265	33	$16,500
Two Harbors/Border	220	28	$14,000
Two Harbors/Grand Marais	145	18	$ 9,000
Duluth/Grand Marais	185	23	$11,500

Total Construction Cost

Termini	Tread	Bridges	Campsites	Trailheads	Total
Duluth/Thunder Bay	$828,750	$186,000	$21,000	$20,000	$1,055,750
Duluth/Border	$658,750	$150,000	$16,500	$20,000	$ 911,100
Two Harbors/Border	$552,500	$135,000	$14,000	$20,000	$ 721,500
Two Harbors/Grand Marais	$361,250	$ 81,000	$ 9,000	$20,000	$ 471,250
Duluth/Grand Marais	$467,500	$105,000	$11,500	$20,000	$ 604,000

2. Maintenance

An average of $100/mile is the projected annual maintenance cost. This compares favorably with the National average of $130/mile cited by the 1980 RPA Assessments. Based on that value the total maintenance costs for the various options are:

Duluth/Thunder Bay	340 trail miles	$34,000
Duluth/Border	265 trail miles	$26,500
Two Harbors/Border	220 trail miles	$22,000
Two Harbors/Grand Marais	145 trail miles	$14,500
Duluth/Grand Marais	185 trail miles	$18,500

D. SUPPORT FOR AND INTEREST IN THE PROJECT

Ballman (1980) found that 45 percent of the operators of firms on the BWCA edge in identifying the change in their customers recreation and accomodation needs for the period 1975-1980 named hiking opportunities. The same study asked these operators to identify the change in customer demand for the next 5 years (1980-1985). Eighty-seven percent named more hiking opportunity to be needed.

When asked what was their greatest need for assistance to meet future demands, the operators identified help in developing trails and roads as most needed.

These expressions of need by operators of firms representative of the tourism industry along the North Shore, indicate broad based interest in providing additional hiking opportunities. Support other than financial responsibility for the total project could be expected. These businesses would probably be willing to assist by providing housing for Volunteers working on the trail or by modifying their business to accommodate users, but economically could not be expected to finance the project with hard cash. The Lutsen Tofte Tourism Association has used this procedure of providing free room and board in exchange for Volunteer Maintenance of X-C Ski Trails in the area, with great success.

Informal contacts with local residents and with visitors who express an interest in hiking have indicated high interest and support for this project.

At a meeting held in January 1986 to inform interested and affected parties of the proposed project, unanimous support was given by the thirty attendees representing local government, businesses, resorts, and hiking enthusiasts.

Officials from the Thunder Bay District of the Ontario Ministry of Natural Resources have indicated interest in completing the trail to Thunder Bay but it is not presently a priority. It would serve as an addition to a hiking trail which now extends from Sault Ste. Marie northward to Nipigon which is only 70 miles east of Thunder Bay. If completed the trail would form a route along the entire north and east shore of Lake Superior from Duluth, MN to Sault Ste. Marie, Ontario. This route could also then connect with the North Country Trail which would provide a Lake Superior circle route.

E. RECOMMENDED ACTIONS

1. Based on this study, it is recommended that the Superior Hiking Trail be constructed on the ridgeline paralleling Lake Superior. Criteria which have been identified as essential when evaluating the potential of providing a high quality facility have been met. In addition, public support for the project is enthusiastically present.

2. The long range desired termini of the trail are Duluth, Minnesota and Thunder Bay, Ontario. Because of rights of way difficulties or other temporary problems, interim termini such as Two Harbors, Minnesota to the Canadian border could be identified until the end objective can be met.

3. Establishment of a non-profit organization, called perhaps, The Superior Hiking Trail Association, is essential to the viability of the project. The duties of the Association would be:

   a. Assume responsibility for construction and maintenance of the trail system.
   b. Administer trail development funds.
   c. Enter into necessary agreements with public agencies and private landowners to enable the Association to administer the trail.
   d. Promote and market the trail.

4. A trail coordinator is needed to oversee the R/W acquisition, layout and construction of the trail and to carry out the direction of the Association. This should be a paid employee.

5. Public funding of the trail should be attempted. The Legislative Committee on Minnesota Resources is one potential source of funding. The Association in cooperation with Minnesota DNR should prepare a funding proposal for consideration by LCMR.

6. The trail should be developed as a single use, hiking only, trail. Combined use trails, in general, lead to conflicts between users and to a lower quality trail for any one use.

7. Nomination as a National Recreation Trail should be accomplished early on to bring recognition to the trail and to promote use of the trail.

8. Contacts with volunteer organizations and clubs interested in assisting with constructing and maintaining trails should be established by the Association to enlist the help that will be needed even if funding is obtained.

9. Construct the trails in a series of relatively short segments, 10-12 miles each, which are interconnected to provide the option of extended hikes but still provide for the day hiker and the overnight hiker.

10. Because the trails would parallel the north shore of Lake Superior, which is also where the motels and resorts are located, it is particularly well suited, perhaps even unique, in providing the opportunity for a hostel or hike through system with the existing resorts. Private enterprise should be encouraged to capitalize on this unique opportunity.

11. Marketing efforts should be directed at the Chicago area and the State of Iowa, both of which provide a substantial number of tourists to Northeastern Minnesota.

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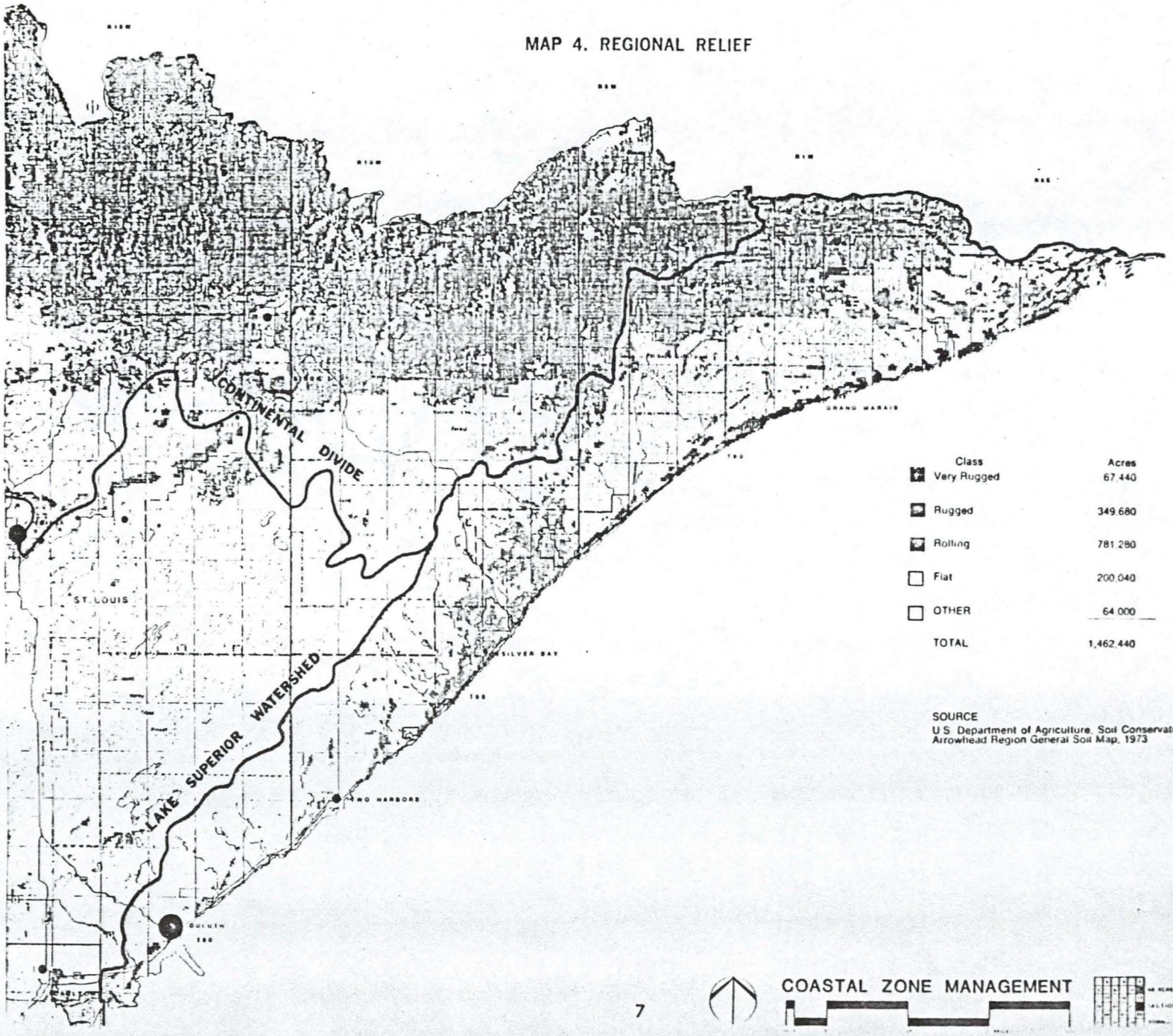
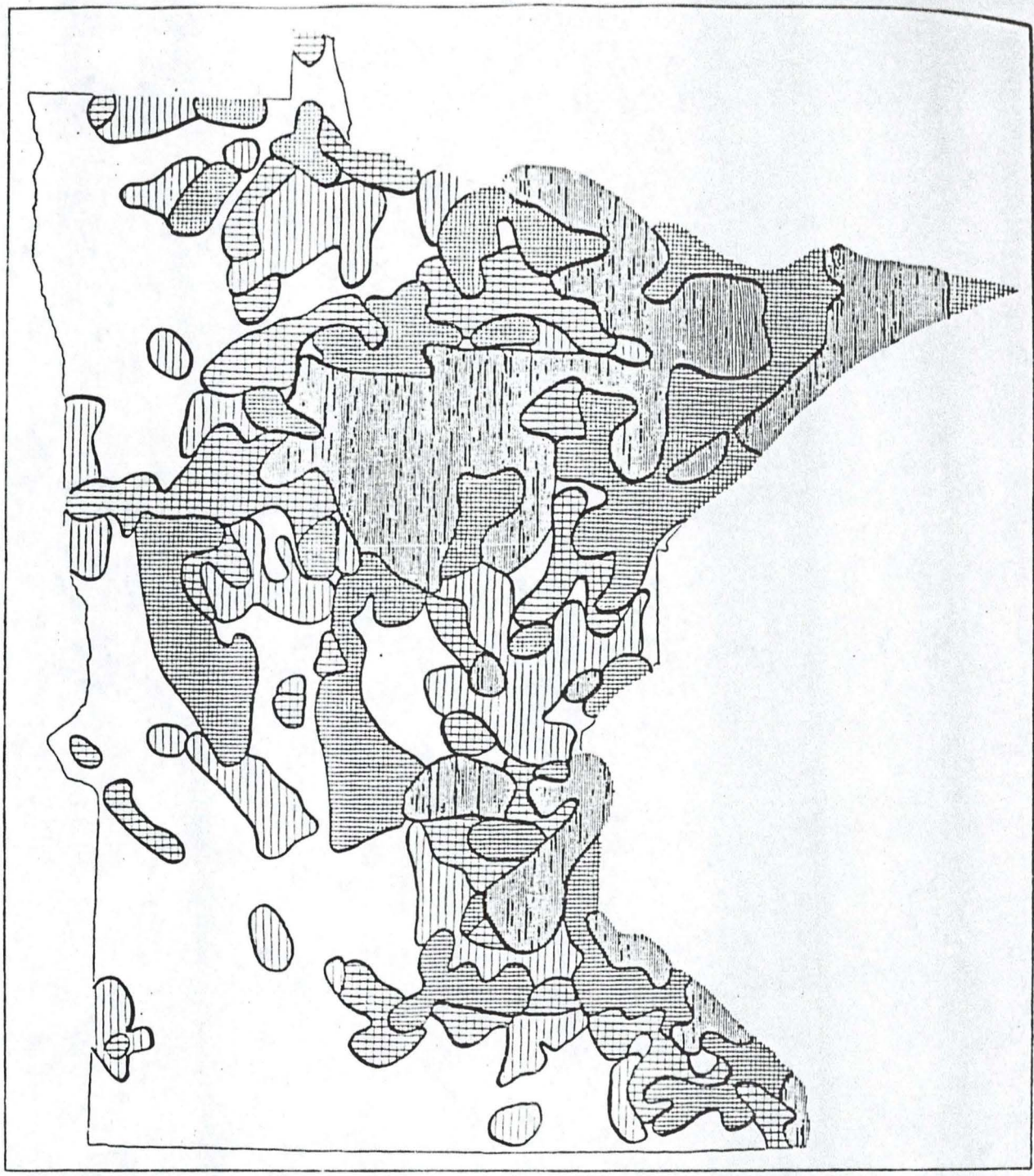
MAP 4. REGIONAL RELIEF



Class	Acres	Percent
Very Rugged	67,440	4.6
Rugged	349,680	23.9
Rolling	781,280	53.4
Flat	200,040	13.7
OTHER	64,000	4.4
TOTAL	1,462,440	100 %

SOURCE
U.S. Department of Agriculture, Soil Conservation Service
Arrowhead Region General Soil Map, 1973



Source: DNR Trails and Waterways

ALTERNATIVE C

Trail Priorities based on
PUBLIC LAND 25%
POPULATION 25%
TRAIL SUITABILITY 50%

High Priority

Low Priority

Figure 33.

13—RECREATION OPPORTUNITY SPECTRUM

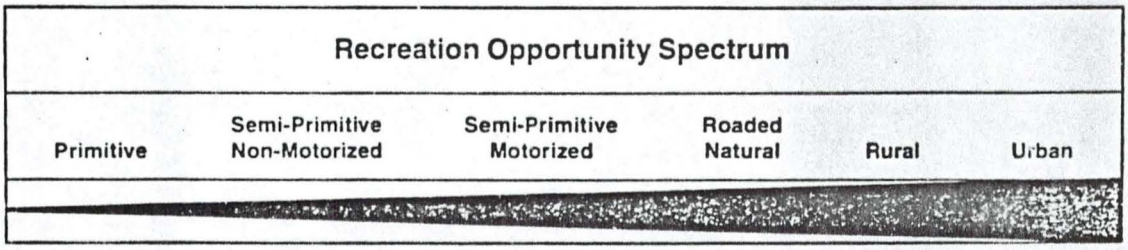
While the goal of the recreationist is to obtain satisfying experiences, the goal of the recreation resource manager becomes one of providing the opportunities for obtaining these experiences. By managing the natural resource setting, and the activities which occur within it, the manager is providing the opportunities for recreation experiences to take place. Therefore, for both the manager and the recreationist, recreation opportunities can be expressed in terms of three principal components: the activities, the setting, and the experience.

For management and conceptual convenience possible mixes or combinations of activities, settings, and probable experience opportunities have been arranged along a spectrum, or continuum. This continuum is called the Recreation Opportunity Spectrum (ROS) and is divided into six classes (Figure 1). The six classes, or portions along the continuum, and the accompanying class names have been selected and conventionalized because of their descriptiveness and utility in Land and Resource Management Planning and other management applications.

Each class is defined in terms of its combination of activity, setting, and experience opportunities (Table 1). Subclasses may be established to reflect local or regional conditions as long as aggregations can be made back to the six major classes for regional or national summaries. An example of a subclass may be a further breakdown of Roaded Natural into subclasses based on paved, oiled, or dirt surfaced roads, which in turns reflects amount of use, or a further breakdown of Primitive based upon aircraft or boat use.

The Recreation Opportunity Spectrum provides a framework for stratifying and defining classes of outdoor recreation opportunity environments. As conceived, the spectrum has application to all lands regardless of ownership or jurisdiction. It's use in the National Forest System will facilitate the consideration, determination and implementation of the recreation management role.

Figure 1



D. Recommendations

- Development by various trail-providing agencies in total should reflect priorities reflected in Alternative C.

- Each trail-providing agency should strive to institutionalize the contributing faciors of Alternative C into the types of trails it provides.

- The DNR should use Alternative C to prioritize development of its state trails.

- The DNR should use factors contributing to Alternative C in ascertaining potential usefulness of unit trails.

- Alternative C should help guide funding of locally initiated grant-in-aid trails.

Table 1

ROS Activity Characterization*

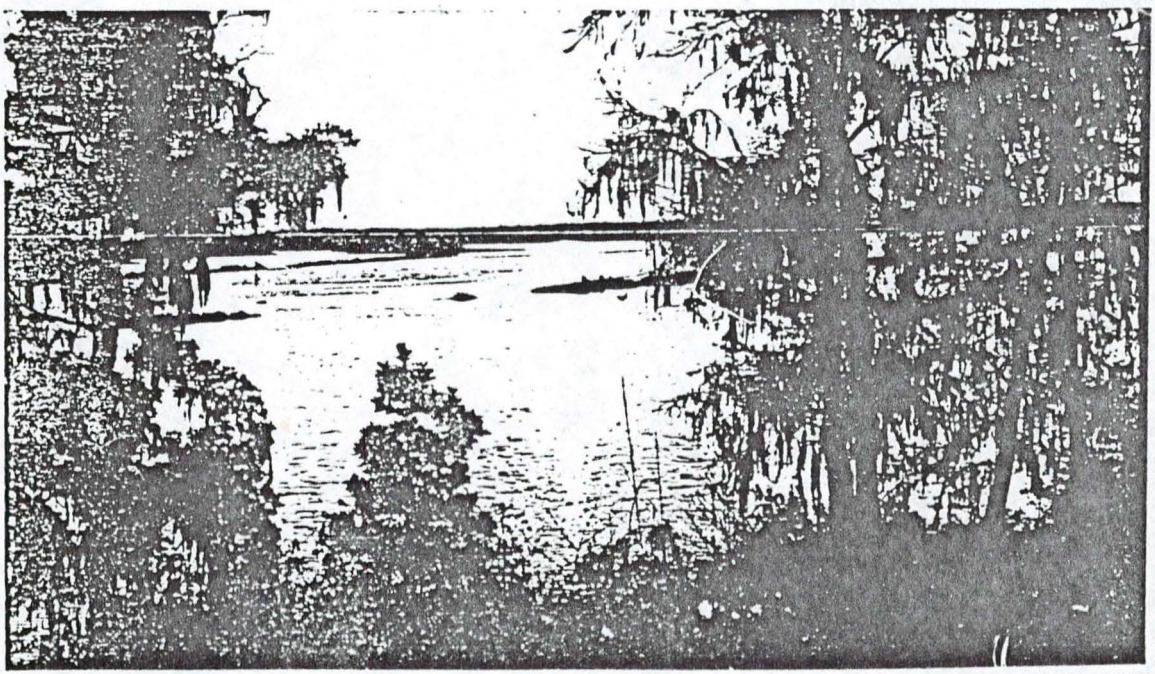
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Land Based:	**Land Based:**	**Land Based:**	**Land Based:**		
Viewing Scenery	Viewing Scenery	Viewing Scenery	Viewing Scenery		
Hiking and Walking	Automobile (off-road use)	Viewing Activities	Viewing Activities		
Horseback Riding	Motorcycle and Scooter Use	Viewing Works of Human-Kind	Viewing Works of Human-Kind		
Tent Camping	Specialized Landcraft Use	Automobile (includes off-road use)	Automobile (includes off-road use)		
Hunting	Aircraft Use	Motorcycle and Scooter Use	Motorcycle and Scooter Use		
Nature Study	Hiking and Walking	Specialized Landcraft Use	Train and Bus Touring		
Mountain Climbing	Horseback Riding	Train and Bus Touring	Aircraft Use		
	Camping	Aircraft Use	Aerial Trams and Lifts Use		
	Hunting	Aerial Trams and Lifts Use	Hiking and Walking		
	Nature Study	Hiking and Walking	Bicycling		
	Mountain Climbing	Bicycling	Horseback Riding		
		Horseback Riding	Camping		
		Camping	Picnicking		
		Picnicking	Resort and Commercial Services Use		
		Resort and Commercial Services Use	Resort Lodging		
		Resort Lodging	Recreation Cabin Use		
		Recreation Cabin Use	Hunting		
		Hunting	Nature Studies		
		Nature Studies	Gathering Forest Products		
		Mountain Climbing	Interpretive Services		
		Gathering Forest Products	Team Sports Participation		
		Interpretive Services	Individual Sports Participation		
			Games and Play Participation		
Water Based:	**Water Based:**	**Water Based:**	**Water Based:**		
Canoeing	Boating (powered)	Tour Boat and Ferry Use	Tour Boat and Ferry Use		
Other Watercraft (non-motorized use)	Canoeing	Boat (Powered)	Boat (Powered)		
Swimming	Sailing	Canoeing	Canoeing		
Fishing	Other Boating	Sailing	Sailing		
	Swimming	Other Watercraft Use	Other Watercraft Use		
	Diving (skin or scuba)	Swimming and Waterplay	Swimming and Waterplay		
	Fishing	Diving (skin and scuba)	Diving (skin and scuba)		
		Waterskiing and Water-Sports	Waterskiing and Watersports		
		Fishing	Fishing		
Snow and Ice Based:	**Snow and Ice Based:**	**Snow and Ice Based:**	**Snow and Ice Based:**		
Snowplay	Ice and Snowcraft Use	Ice and Snowcraft Use	Ice and Snowcraft Use		
X-Country Skiing/Snowshoeing	Skiing, Downhill	Ice Skating	Ice Skating		
	Snowplay	Sledding and Tobogganing	Sledding and Tobogganing		
	X-Country Skiing/Snowshoeing	Downhill Skiing	Downhill Skiing		
		Snowplay	Snowplay		
		X-Country Skiing/Snowshoeing	X-Country Skiing/Snowshoeing		

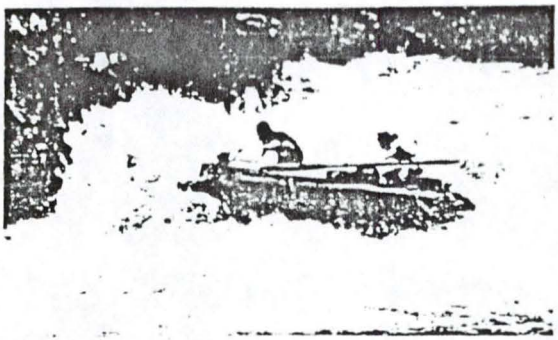
*These activities (from RI M FSH 2309.11) are illustrative only. Specific additions or exception of activities within a ROS class may occur depending upon local forest situations.

Table 1 (continued)

ROS Setting Characterization*					
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Area is characterized by essentially unmodified natural environment of fairly large size. Interaction between users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of [illegible]-induced restrictions and controls. Motorized use within the area is not permitted.	Area is characterized by a predominantly natural or natural-appearing environment of moderate-to-large size. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but are subtle. Motorized use is not permitted.	Area is characterized by a predominantly natural or natural-appearing environment of moderate-to-large size. Concentration of users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but are subtle. Motorized use is permitted.	Area is characterized by predominantly natural-appearing environments with moderate evidences of the sights and sounds of man. Such evidences usually harmonize with the natural environment. Interaction between users may be low to moderate, but with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is provided for in construction standards and design of facilities.	Area is characterized by substantially modified natural environment. Resource modification and utilization practices are to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high. A considerable number of facilities are designed for use by a large number of people. Facilities are often provided for special activities. Moderate densities are provided far away from developed sites. Facilities for intensified motorized use and parking are available.	Area is characterized by a substantially urbanized environment, although the background may have natural-appearing elements. Renewable resource modification and utilization practices are to enhance specific recreation activities. Vegetative cover is often exotic and manicured. Sights and sounds of humans, on-site, are predominant. Large numbers of users can be expected, both on-site and in nearby areas. Facilities for highly intensified motor use and parking are available with forms of mass transit often available to carry people throughout the site.

*This table is for descriptive purposes only.
Use the five specific ROS class delineation criteria given in Table 2 to identify the actual areas to which these descriptions apply.





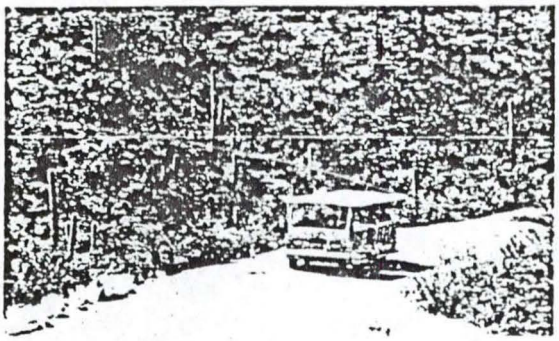


Table 1 (Continued)

ROS Experience Characterization*					
Primitive	**Semi-Primitive Non-Motorized**	**Semi-Primitive Motorized**	**Roaded Natural**	**Rural**	**Urban**
Extremely high probability of experiencing isolation from the sights and sounds of humans, independence, closeness to nature, tranquility, and self-reliance through the application of woodsman and outdoor skills in an environment that offers a high degree of challenge and risk.	High, but not extremely high, probability of experiencing isolation from the sights and sounds of humans, independence, closeness to nature, tranquility, and self-reliance through the application of woodsman and outdoor skills in an environment that offers challenge and risk.	Moderate probability of experiencing isolation from the sights and sounds of humans, independence, closeness to nature, tranquility, and self-reliance through the application of woodsman and outdoor skills in an environment that offers challenge and risk. Opportunity to have a high degree of interaction with the natural environment. Opportunity to use motorized equipment while in the area.	About equal probability to experience affiliation with other user groups and for isolation from sights and sound of humans. Opportunity to have a high degree of interaction with the natural environment. Challenge and risk opportunities associated with more primitive type of recreation are not very important. Practice and testing of outdoor skills might be important. Opportunities for both motorized and non-motorized forms of recreation are possible.	Probability for experiencing affiliation with individuals and groups is prevalent, as is the convenience of sites and opportunities. These factors are generally more important than the setting of the physical environment. Opportunities for wildland challenges, risk-taking, and testing of outdoor skills are generally unimportant except for specific activities like downhill skiing, for which challenge and risk-taking are important elements.	Probability for experiencing affiliation with individuals and groups is prevalent, as is the convenience of sites and opportunities. Experiencing natural environments, having challenges and risks afforded by the natural environment, and the use of outdoor skills are relatively unimportant. Opportunities for competitive and spectator sports and for passive uses of highly human-influenced parks and open spaces are common.

*These experiences are highly probable outcomes of participating in recreation activities in specific recreation settings.

APPENDIX D

ACTION PLAN

SUPERIOR HIKING TRAIL PROJECT

	Task	Responsibility	When
1.	Prepare funding request for consideration by Legislative Committee on Minnesota Resources (LCMR)	MDNR (John Chell)	Completed May 1986
2.	Form Superior Hiking Trail Association to manage and administer the trail project.	Selected Representatives of local interest groups, Forest Service and MDNR	June 1986
3.	Appoint Trail Coordinator (MDNR employee)	MDNR (Regional Administrator or Regional Trails Coordinator)	July 1986
4.	Determine priorities for construction of trail segments.	Superior Hiking Trail Association (SHTA)	July 1986
5.	Determine Right of Way needs as per Task 4. Begin contacts with landowners to acquire easements.	SHTA and Trail Coordinator	Sept. 1986
6.	Contact potential user groups to obtain their support and assistance, financial and physical.	SHTA	Dec. 1986
7.	Nominate as a National Recreation Trail or Scenic Trail.	SHTA (Forest Service Coordinate)	By Jan. 1987
8.	Begin trail layout on the ground as per Tasks 4 and 5.	SHTA Members and Trail Coordinator	April 1987
9.	Begin construction as per Tasks 4, 5 & 7, to include trailhead and campsite facilities.	Contractors/Volunteers	July 1987
10.	Tasks 4, 5, 7 and 8 continue until trail complete.	SHTA and Trail Coordinator	-----
11.	Promote and market the trail.	SHTA	When sufficient opportunities exist to allow marketing.
12.	Maintenance of existing portions of the trail and new construction as completed.	SHTA, Forest Service, MDNR	ongoing -